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Advances in Veterinary Medicine

(*Continued from page* 195)

Chemotherapy (*Cont.*)

The Use of Sulphonamide Drugs in Veterinary Medicine

Some aspects of this subject have already been reviewed by Milks (1942).

Sulphanilamide.—Stableforth and Hignett (1942) described extensive experiments on the administration of sulphanilamide to animals. There was a slight species variation but in general it may be said that single doses of 1 to 4 grammes per 20 lb. body weight can be used with safety; this has been confirmed by much clinical experience. With the smaller dose a peak blood concentration of 5 to 10 mg. per cent. was reached in five to seven hours; this gradually fell and there was little left after 24 hours. With the larger dose (approximately 7 oz. per 1,000 lb. cow) the peak concentration reached 30 to 40 mg. per cent., dropping to about two-thirds of this in twelve hours, and to about 10 mg. per cent. in 24 hours. After the same large dose the following concentrations were obtained in the milk: eight hours, 12 mgs. per cent.; 24 hours, 8 mgs. per cent.; 48 hours, 2 mgs. per cent. All workers agree that a large initial dose should be given and that the blood concentration can then be maintained by smaller doses administered every eight to twelve hours. Hignett (1941) reported that sulphanilamide was of great value in treating pneumonia in young horses (a disease in which haemolytic streptococci invade the lung tissue), and it has been used with varying success in numerous other diseases of domestic animals; it is probably valuable in the treatment of joint-ill in lambs (a streptococcal condition) and in foals—which may be due to streptococci, coliform or other organisms—as well as other septicaemic conditions of young animals. Its value in the treatment of mastitis will be described later. Swann (1942) states that it is useful, when applied locally, for the treatment of infected wounds and acute or chronic otorrhea, and also for the prevention of metritis or vaginitis following a difficult parturition, 8 oz. may be introduced into the uterus of the cow or mare followed by smaller doses if necessary.

Sulphapyridine.—This drug is valuable in the treatment of numerous local septic conditions in large and small animals when applied as a dusting powder (Bryan, 1942). When given orally to cattle a total daily dose of 4 to 6 grammes per 100 lb. body weight, divided into four doses, produced an effective blood concentration but there was loss of appetite, constipation and a decrease in milk production; these symptoms were not serious and disappeared when the drug was no longer given (Klein, Kleckner and Biltz, 1941). Farquharson (1942) has found sulphapyridine to be much more effective than sulphanilamide in the treatment of calf diphtheria and necrotic vaginitis. In America calf diphtheria causes a 90 per cent. mortality which can be almost completely prevented by giving a daily oral dose of 6 to 7 grammes per 100 lb. body weight. Sulphapyridine sodium was also effective when given intravenously in doses of 3 grammes per 100 lb. body weight. Treatment need only be continued for two or three days. In an outbreak of calf scours and calf pneumonia Thorp *et al.* (1942) found that sulphapyridine produced obviously beneficial results. The total daily dose used, which should be split into two or three doses, was 5 to 7 grammes per 100 lb. body weight. The dose should be reduced by 0·02 gramme per lb. body weight every two days. In severe cases a initial dose of 10 grammes per 100 lb. body weight could probably be given.

Sulphathiazole.—Has hardly been used in veterinary medicine owing to its cost. It can be used in the same way as sulphapyridine and should theoretically be more effective; this was found to be so by Deleplane and Stuart (1941) for the treatment of coryza in fowls; 2 gramme daily doses were given.

Sulphaguanidine.—It has already been noted that because of its slow rate of absorption by the gut sulphaguanidine is particularly valuable as an intestinal antiseptic. It has been found (Cameron and McOmie, 1941) that doses of 5 grammes per 100 lb. body weight may be given twice daily to pigs with safety but that this dose is toxic to lambs. Ten times the above dosage was toxic to pigs but a *single* dose of 1 gramme per lb. body weight did not produce toxic symptoms. Only a small proportion of the drug is absorbed but a large proportion of this is acetylated and toxic symptoms are probably due to kidney damage caused by the insoluble acetylated compound. Cameron (1942) treated pigs suffering from severe enteritis with four daily doses of 5 to 10 grammes per 100 lb. body weight. The drug was considered to have some therapeutic value but it was emphasised that the recovered animals were often unthrifty. An unlimited food supply and overeating will predispose to swine enteritis and it is important to reduce the food when treating an outbreak. Thorp and Shigley (1942) used this drug during an outbreak of calf scours; it was considered that 40 calves treated showed a fairly consistent recovery, superior to that with any other treatment. The dosage employed was 13 to 17 grammes per 100 lb. body weight. On the third day the dose should be reduced by 5 grammes per 100 lb. body weight and on the fourth day should not be more than 6 grammes per 100 lb. body weight. Following excessive experimental dosage, three times the therapeutic, inflammation and necrosis of the kidneys was produced.

Sulphaguanidine is also coccidiostatic. *Eimeria tenella* is the cause of acute caecal coccidiosis in young chicks, and *Eimeria necatrix* causes severe intestinal coccidiosis in older chicks. Levine (1941a) found that although sulphaguanidine had no curative effect on birds infected with these organisms the presence of 1 per cent. of the drug in the food largely prevented the development of lesions due to *E. tenella*, and a concentration of 1½ per cent. was effective against *E. necatrix*. The same worker (Levine, 1941b) found that the incorporation of 5 per cent. of flowers of sulphur in the ration was also valuable in preventing infection by the above organisms but he considered sulphaguanidine to be the more promising drug and it should be noted that sulphur has a tendency to produce rickets. Horton Smith (1942) has recorded similar favourable results with sulphaguanidine.

The Therapeutic Value of Substances derived from Bacteria and Fungi

It has been known since the time of Pasteur that certain soil bacteria produce substances antagonistic to the growth of pathogenic bacteria. It is only during recent years, however, that the possible therapeutic value of these substances has been realised and a great deal of research is now being carried out on the subject. The account given here is taken from a review by Allcroft (1942).

Flemming (1929) found that a mould *Penicillin notatum* produced a substance "penicillin" which inhibited the growth of most Gram-positive bacteria in high dilutions. It is now known that even in large doses this substance is non-toxic to the body tissues but even when very dilute (1 : 1,000,000) it inhibits the growth of most Gram-positive bacteria *in vitro* and *in vivo*. It is therefore a valuable therapeutic substance but owing to the small supply it has not yet been used in veterinary medicine. It is bacteriostatic but not bactericidal and in this resembles the sulphonamides but differs from gramicidin.

Dubos *et al.* have found that *Bacillis brevis*, an anaerobic sporulating organism, produces a substance (tyrothricin) with a marked bactericidal action on certain Gram-positive organisms. It is now known that tyrothricin consists of two distinct substances, tyrocidine and gramicidin; tyrocidine is bactericidal *in vitro* for both Gram-positive and Gram-negative species, while gramicidin is effective only against Gram-positive organisms, but tyrocidine has no *in vivo* effectiveness and in this respect resembles other classical antiseptics. In general, tyrocidine behaves as a protoplasmic poison, and like many other antiseptics loses much of its activity in the presence of animal tissues. Gramicidin on the contrary exerts a much more subtle physiological effect on the susceptible bacterial cells and when applied locally at the site of infection retains *in vivo* a striking activity against Gram-positive microorganisms and may prove valuable in the treatment of mastitis.

Special techniques have now been developed for isolating soil bacteria which produce these inhibitory substances, so fresh advances may be expected.

Phenothiazine

Discussing this drug, Taylor (1941) states that although anthelmintic drugs have been used since prehistoric times we still do not know how most of them act; this is true of phenothiazine. The chemical was first synthesised in 1885 but it has only been used as a parasiticide in animals since 1938; a large number of reports on its efficacy have now appeared and these have been reviewed by Davey and Innes (1942). In general it may be said that it acts most effectively on the worms in the large intestine and in the fourth stomach of ruminants.

It has a very low solubility (1 : 800,000) and, like flowers of sulphur, is "unwettable." It can be given mixed with the food or in tablet form if the tablets are prepared so that they readily disintegrate in

the intestine. It is rather bulky to be given in capsules and if a watery suspension is spilt red oxidation products produce very fast stains on sheep's wool or clothing.

The dose for sheep is 0·3 to 0·5 gramme per lb. body weight (about 15 to 35 grammes per animal). Its action on the various intestinal worms varies but comparative trials indicate that, in general, it is more effective than the usual nicotine copper sulphate mixture. Unfortunately it is more expensive. The chances of toxic effects following the administration of a 30 gramme dose in sheep appear to be negligible but care should be taken with young lambs. It is probable that phenothiazine can be used in goats in the same way as in sheep. Pigs will usually tolerate a dose of 0·2 to 0·25 gramme per lb. body weight and this is efficient in removing *Oesophagostomum* and moderately efficient in removing mature ascarids. The drug must be used with special care in young pigs and 0·5 gramme per lb. body weight may produce toxic symptoms.

Phenothiazine appears to be of little value in dogs but in 0·5 gramme doses may be almost completely effective in eliminating *Heterakis* from poultry and may therefore be of value in controlling "blackhead" in turkeys which is spread *via* the eggs of *Heterakis*.

Phenothiazine has every indication of being the best anthelmintic yet discovered against the strongyloid worms of the large intestine of the horse. Knowles and Blount (1941) state that in doses of 30 grammes (per 1,000 lb. horse) it is highly efficient in the treatment of equine strongylosis. This dose is non-toxic and non-purgative, accessory purgatives should not be given and treatment causes very little interference with work. No food or bedding is given to the horse after 2 p.m. on the day before treatment and the drug is given incorporated in a bran mash at 10.30 a.m., if the mash is not all eaten a few crushed oats may be added. The normal diet may be given six hours later. The drug has been used extensively and apparently safely in the Army but unfortunately very occasional toxic and even fatal results have been reported by other workers following a dose of only 30 grammes. Haemoglobinuria and icterus are observed and the heart, spleen and kidneys may be greatly enlarged. No explanation can be given for these rare toxic effects.

There is some indication that phenothiazine is more toxic when given in a number of small doses than in one large dose, and the amounts recommended apply to *single* doses. In general it may be said that following proper dosage in sheep the chances of toxic effects are negligible and very slight in horses. Adult cattle and pigs are also reasonably safe subjects but there is need for care in giving phenothiazine to young animals, particularly young pigs and cattle.

Considerable amounts of phenothiazine are absorbed from the intestine and derivatives are excreted in the urine and milk. These derivatives have bacteriostatic properties and may act as urinary antiseptics.

Tuberculosis

What has been Achieved in the Control of Tuberculosis

The discovery of tuberculin in 1890 and the realisation that it was a valuable diagnostic agent when inoculated subcutaneously in cattle, at once raised the possibility of control by the radical methods which had been employed to eradicate rinderpest and pleuropneumonia. Unfortunately, the use of the test showed that the incidence of tuberculosis in Europe was so high that its control by these methods would be quite impracticable.

Bang introduced a system of control based on the formation of a young healthy herd; nearly all calves are free from the disease when born, and they were removed from their dams and fed on pasteurised milk. They were tuberculin tested and as they grew up gradually formed a new clean herd which was kept isolated from the old cows. This scheme has been remarkably successful in a number of Danish herds (Bang, 1923), but it is unlikely that it would work in this country unless separate premises, or preferably another farm, were available for the clean herd. In Great Britain the control of tuberculosis under the attested herds scheme has been based on the tuberculin test and the "disposal" of reactors. In October (1942) the number of herds certified as free from tuberculosis was 16,222, but the general incidence of tuberculosis is still high. In a recent annotation (*Vet. Rec.*, **54**, 400) it was stated that the Germans are now developing a scheme of tuberculin testing very similar to the British.

The position in most non-European countries is more favourable. Approximately 10 per cent. of cattle in the U.S.A. were affected with tuberculosis in 1915, and there was every indication that the incidence was increasing. Early European experience had shown the immense difficulty of control when once the disease was widespread, and following Melvin's pioneer work, Mohler concluded that drastic action must be taken. The test-and-slaughter policy was introduced in 1917, and the single intradermal test, using the caudal fold, was employed.

The comparatively low original incidence of tuberculosis in the U.S.A. makes any direct comparison between the results of control schemes in that country and Great Britain quite impossible. The outstanding feature of the campaign against bovine tuberculosis in America has, however, been the wisdom and common sense displayed in its execution (see Myers, 1939). The support of the veterinary practitioners, who have played a very large part in the scheme, was first obtained and then an intensive educational drive was carried out in the agricultural colleges and amongst farmers; there were public demonstrations of the lesions in reacting cattle and *the farmer was, quite rightly, made to feel that it would be to his own financial advantage to control tuberculosis; he was also given adequate compensation for reactors which were slaughtered.*

Over 12 million cattle were tested during the year 1940-41, only 0·3 per cent. reacted to the test, and of these nearly half were no-lesion reactors (see later). There were 261,600 herds containing 3,912,500 cattle accredited as free from tuberculosis. Only 0·07 per cent. of over 10 million cattle inspected at the slaughter-houses showed any lesions of tuberculosis. Avian tuberculosis in poultry and swine is, however, still a serious problem (Wight, 1942). In Canada the incidence of tuberculosis is approximately 2 per cent. (Hall, 1941) and there is a control scheme similar to that in the U.S.A. In Australia the incidence is probably less than 10 per cent. and tuberculin testing on a wide scale is now being undertaken.

Tuberculin and the Tuberculin Testing of Cattle

It has long been held that a specific protein is responsible for tuberculin activity and that the various other constituents of the medium might be responsible for non-specific reactions. Glover (1933) carried out extensive trials to ascertain the substances or procedures responsible for reducing the specificity of tuberculin and as a result "Cambridge" tuberculin was produced by growing the organism on a synthetic medium and precipitating the active protein with ammonium sulphate instead of concentrating by evaporation; the amount of protein in the final product was not estimated.

The U.S.A. Bureau of Animal Industry (B.A.I.) tuberculin is prepared by growing the organism on a synthetic medium and then concentrating by evaporation (Dorset and Henley, 1934). There is now ample experimental evidence showing that tuberculin activity is dependent on a specific protein which can be precipitated with trichloracetic acid or other substances, as well as ammonium sulphate. It is known that this protein can exist in a number of different forms having different molecular weights; in general it may be said that biological activity decreases with decrease in molecular weight, but there is still much to be learnt concerning the relationship of chemical and physical properties of the protein to its biological activity (Seibert, 1941).

These variations in the activity of tuberculin protein are unfortunate as it means that complete reliance cannot be placed on chemical methods of standardisation. Further, it would appear that the relative potency of tuberculins is not always the same when judged by tests on guinea-pigs and cattle respectively. Bazely and Barraclough (1941) compared the potency of various synthetic medium tuberculins and their results are shown in Table I.

Table I

	Comparison with International Standard in guinea-pigs	Potency as judged by ability to detect tuberculous cows (No. 1 being the best tuberculin)
Australia—		
C.S.L. H8	Equal	(6)
C.S.L. H9	Equal	(4)
C.S.L. D & HTB ..	Slightly greater than ½	(1)
U.S.A.—		
B.A.I. 683	½	(3)
B.A.I. 707	½ to ¼	(2)
Canadian Serial F ..	1/12 to ¼	(5)

C.S.L. D & HTB (actually the same batch as that used by Legg and Maunder) and the B.A.I. tuberculins were produced by heat concentration, whilst C.S.L. H8 and 9 were produced by Seibert's ultra-filtration method. Their conclusions are based on over 3,000 tuberculin tests and it is important to note that although the Canadian tuberculin seemed so poor when tested on guinea-pigs, it was better than C.S.L. H8 for testing cattle. It was produced from a bovine strain whilst the other tuberculins were prepared from a human strain.

Despite these difficulties, chemical standardisation of tuberculin (Green, Eden and Reid, 1942) is an important advance and it is reasonable to assume that when applied to tuberculins prepared under identical conditions, it will give more accurate results than animal assay but the possibility of error cannot be overlooked.

The tuberculin test in any species is greatly complicated because the allergic state of the animal varies during the course of the disease and may be affected by various extrinsic factors. So much confusion has arisen around the term "allergy" that when discussing the intradermal test it is better to speak of skin sensitivity and it is known that this is not related to the extent of the disease.

Tuberculin was first used as a diagnostic agent in cattle by Gutman, a Russian, in 1891, and later in the same year fairly extensive tests were carried out by M'Fadyean and by Bang. The early conclusions reached by these two investigators, concerning the value and limitations of the tuberculin test in cattle, have been confirmed by all subsequent investigations. The intradermal test was first used by Moussu in 1908.

(*Concluded in next issue. For references on chemotherapy see page* 195.)

Tuberculosis

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"RE-ENLISTMENT OF THE HORSE"

"The mechanical age is a long way out of its infancy, yet interest in the horse and his activities persists," states the Military Correspondent of *The Times*, and continues, "You can see it in a certain Northern town, where no self-propelled vehicle now could attract half the attention given every day to the horsed wagons of the R.A.S.C. which are doing all the short-distance haulage for the Headquarters of the Northern Command.

"The unit came into being, apparently haphazardly, with the arrival last autumn of a few horses which the Royal Army Veterinary Corps had 'going spare,' and an odd assortment of commercial open-sided trucks such as coal merchants and greengrocers use. With R.A.V.C. drivers they began to take over the short-distance carriage of rations and supplies and ordnance stores, with the object of effecting vital economy in the use of motor fuel, oil and tyres and in the employment of M.T. drivers.

"At first no special regard seemed to be paid to the military aspect of this re-enlistment of the horse into the Army; but in due course there arrived an officer of the R.A.S.C. with experience of horses in the last war and of horsed transport in Africa in this one. He secured adequate stabling (racehorses once used it); and then more men and more animals, including some fine mules, a number of sets of new regulation harness and saddlery, and several long-disused Army wagons to supplement his 'fleet' of civilian carts arrived. He also made standing orders instituting the time-honoured routine of horse-soldiering.

"The N.C.Os and men came from a variety of regiments, but with the common bond of experience of horses. Most of them served in the last war, and are in the lower medical categories.

"For those who need it a riding school has been formed to teach the Army way of riding-and-leading pairs in draught. The unit is now fairly established as a centre for the general training and furnishing of detachments to do their useful, economical work in several different parts of the Command. The officer-in-charge says his latest requirement, 'to round things off,' is a trumpeter."

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Record Price for Brood Mare.—Mr. Matthew Peacock (stated to be acting for Mr. Tom Ohlson), purchased for 17,000 guineas the six-year-old brood mare "Olein" by "Colombo," out of "Grand Peace" by "Grand Parade." This equalled the record figure for a brood mare sold by auction established in 1925 when the same figure was paid by Mr. E. Esmond for "Straitlace."

CLINICAL COMMUNICATION

Entero-toxaemia in Young Suckled Calves

D. R. MACRAE, E. G. MURRAY
AND J. G. GRANT

For the past four years, during spring and early summer, there has been encountered by us a disease of young calves characterised by sudden onset, short duration and high mortality. So far, in our experience, this disease has been confined to suckled calves which are bedded on straw and are reared on farms well stocked with sheep. The history of the sheep stock in each case has shown either that the flocks are subject to one of the diseases associated with the *Cl. welchii* group of bacteria or that sudden unexplained deaths frequently occur. Most of the cases have occurred in calves during the first week of life, but an occasional case has been encountered in older calves (up to two months old) in which the disease may run a less acute course than in younger calves. Two types of disease have been encountered in very young calves: (*a*) peracute; (*b*) acute.

In the peracute type calves die quite suddenly—without history of previous indisposition and showing no evidence of diarrhoea.

In the acute type a premonitory symptom usually appears on or after the third day of life, consisting in a staring coat. The following day diarrhoea sets in. This may be straw-coloured, white (as in white scour), or even black (as experienced in one outbreak). Temperature varies from 101° F. to 104° F. Depression follows rapidly. The animal lies down and is disinclined to rise. It becomes weaker, coma ensues and death occurs. The moribund state is variable in length and usually lasts for only a few hours.

Post-mortem Examination.—This shows:—

(*a*) Enteritis or gastro-enteritis (often patchy). In some cases the alimentary tract has been practically devoid of solid or liquid matter. but distended with gas.

(*b*) Congestion of alimentary blood-vessels.

(*c*) Pericardial, pleuritic and peritoneal transudate which is straw-coloured or sanious.

(*d*) Petechiae on various internal organs (heart, liver, etc.).

(*e*) Microscopical examination of the alimentary tract and of faeces has always revealed numerous Gram-positive bacilli morphologically resembling *Cl. welchii*. Such bacteria, when typed, have been found to be of the A type of *Cl. welchii*.

Treatment.—Treatment has consisted in the parenteral administration of lamb dysentery serum.

Calves caught at the stage of depression and commencing diarrhoea, on receiving 20 c.c. lamb dysentery serum have recovered and have returned to normal in one to two days.

Of weakly and moribund calves receiving 40 c.c. serum several animals have recovered, though taking longer to return to normal.

In-contact calves given 20 c.c. lamb dysentery serum as a prophylactic dose have shown no symptoms of the disease, although in all cases where faeces have been examined microscopically, bacteria having the morphology of *Cl. welchii* have been demonstrated.

Occasionally cases have been encountered closely resembling the acute type described, in which a mixed infection of bacteria has been observed. These cases have responded to the use of lamb dysentery serum combined with treatment for the other bacteria present (*e.g.*, sulphonamides, brilliant green, etc.).

On some farms only one outbreak has been encountered and in subsequent years no recurrence of the trouble has been experienced, while on the other farms the disease has been encountered in successive years. To date outbreaks have been encountered on 20 farms. In only two outbreaks have the bacteria been typed (these being the first cases encountered separately by Macrae and by Murray). Typing of the bacteria has been done by the Animal Diseases Research Association, Moredun Institute, Gilmerton, to the Director and staff of which Institute we wish to express our thanks for their kind help. A more detailed account of these two outbreaks and of two other outbreaks follows.

OUTBREAK NO. 1

History.—Seven young calves, almost one week old, had died more or less suddenly within a period of three days. Five of them, seemingly normal at 8 p.m. one evening, were found dead or dying about 6 a.m. next morning. Two which were found to be dull and affected with diarrhoea, were disinclined to rise or suckle: gradually became comatose and died within 24 hours of being discovered ill. An eighth calf lay moribund, with straw-coloured diarrhoea exuding from the rectum.

Diagnosis.—Microscopical examination of faeces from the rectum of the moribund calf showed a rich field of Gram-positive bacilli morphologically resembling *Cl. welchii*. The moribund calf died, was subjected to *post-mortem* examination and tissues were submitted for typing of the bacteria present. These were of the A type of *Cl. welchii*.

Treatment.—All the calves on the premises under one week, and all subsequent calves as soon after birth as possible were given 20 c.c. lamb dysentery serum subcutaneously.

Investigation.—Smears from the rectum of all calves subsequently born on the premises were taken daily and examined microscopically. In every case, on the third day of life, bacteria of the morphology of *Cl. welchii* appeared in the faeces

and increased in number until the fifth day—thereafter becoming less numerous and losing their staining characteristics. Although these bacteria were present in their faeces, all these treated calves remained normal and no further deaths occurred.

Discussion.—The calves were suckled in pairs and calves about one fortnight old were bought in as required so as to give each cow one pair of calves. These older calves, although associating with the younger affected calves, did not succumb to the infection. The farm carried a heavy stock of sheep and there had been some sudden deaths amongst the sheep: in one case the cause was definitely *Cl. welchii*, but no attempt had been made to type the organism.

Outbreak No. 2

History.—Eighteen calves from three days to a fortnight old were kept in one enclosure. One calf had died after twelve hours' illness, the symptoms observed by the owner being—dullness, disinclination to move, diarrhoea and subsequent coma. Another calf was practically moribund, two calves were definitely dull and three others had fluid faeces (one straw-coloured and the others whitish).

Diagnosis.—Microscopical examination of faeces of the six ailing calves showed bacilli of the morphology of *Cl. welchii*.

Treatment.—The apparently moribund calf was given 40 c.c. and all the other calves in the enclosure were given 20 c.c. lamb dysentery serum subcutaneously. All subsequent animals were similarly treated as soon after birth as possible. All the ailing animals recovered (including the seemingly moribund animal) and although a few calves, some days later, had slight attacks of white diarrhoea, no deaths occurred.

Discussion.—Again the calves were suckled in pairs and purchased calves were acquired as soon after birth as possible. No attempt was made to type the organism nor to examine faeces of the other calves. The disease recurred in the following year. Pulpy kidney disease affects the flock of sheep and ovitoxicus serum is employed with success in combating its ravages.

Outbreak No. 3

History.—Thinking that he was dealing with "white scour," the owner of 25 calves was treating ailing animals with a proprietary preparation. Ten of the calves died after showing symptoms of dullness, diarrhoea, and coma. Most of the 15 remaining calves were ill, emitting profuse diarrhoea, in some cases whitish, in others straw-coloured, but in the majority of cases black.

Diagnosis.—Tissues from a dead calf submitted for bacteriological examination revealed the presence of *Cl. welchii* of the A type.

Treatment.—All ailing calves were given 40 c.c. lamb dysentery serum and all in-contacts 20 c.c. subcutaneously. All subsequent arrivals were treated as soon after birth as possible, using 20 c.c. serum. All ailing calves recovered and the in-contacts did not develop the disease.

Discussion.—The disease has recurred in subsequent years and treatment of all calves with serum as soon after birth as possible has prevented further losses. The farm carries a heavy stock of sheep and sudden unexplained deaths have been frequent in the flock.

Outbreak No. 4

Three calves under one week old in an enclosure had profuse white diarrhoea. A fourth calf lay dying. Microscopical examination of faeces samples showed, only in the moribund calf, the presence of bacteria of the morphology of *Cl. welchii*. The moribund calf died and the three others were each given 20 c.c. lamb dysentery serum subcutaneously along with treatment for "white scour." They recovered and did not subsequently become ill.

Discussion.—This farm used to carry a regular flock of sheep in which sudden deaths had occurred but were never investigated. Owing to increased cultivation of land, the flock has been disposed of, and so far there has been no recurrence of the disease amongst the calves.

Summary

1. A highly fatal disease of very young calves is recorded.

2. Sudden onset, dullness, diarrhoea (whitish, straw-coloured or black), subsequent coma and early death are the predominant features.

3. In all cases bacilli morphologically resembling *Cl. welchii* have been demonstrated in the alimentary tract of affected animals (either as a pure or a mixed infection). Where typed these bacteria have belonged to the A type of *Cl. welchii*.

4. Lamb dysentery serum has proved to be both curative and preventive if administered sufficiently early.

5. All affected farms have carried sheep flocks in which *Cl. welchii* infections are known to be present or in which sudden unexplained deaths have been frequent.

THE WARBLE FLY MENACE

It may not be generally known that the far north of Scotland, Orkney and Shetland, are almost a free area from the warble fly pest in cattle. Hides from this area are free from the warbles to the extent of about 99 per cent.

It is estimated that the number of British hides affected by warble maggot increased from about 34 per cent. in 1941 to about 41 per cent. in 1942, while hides free from warble were down from 38 per cent. in 1941 to 30 per cent. in 1942. We can only conclude that farmers with the ever-increasing burdens of crop production, have not the time to attend to the dressing of their cattle against warble. From a national standpoint the matter is worth taking in hand.—*Farming News.*

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Weekly Wisdom

Lagrange (1736-1813) *was of opinion that mathematical research was nearly exhausted by his time, and was as wide of the mark as those who, in the 'nineties of last century, maintained that no more great medical discoveries were to be anticipated. For after him mathematics have become increasingly abstract and have proved to be a most powerful unifying principle; each science approaches accuracy the nearer it reaches mathematical expression. Hence the temptation to apply them prematurely, which is a dangerous pitfall in the biological sciences.—Brit. Med. J.*, 1942, Mar. 14, p. 360 (from a review on a book entitled "The Development of the Sciences." Second series. Edited by L. L. Woodruff. **London:** Oxford University Press, 1941.)

ABSTRACTS

[LISTERELLA INFECTION IN CATTLE. Schwarte, L. H., and Biester, H. E. (1942.) *Amer. J. vet. Res.* **3**. 165.]

The number of cattle infected in any herd outbreak is small and the percentage of recoveries is considerable.

Experimental studies showed that cattle are more resistant than pigs or sheep. Two laboratory strains, bovine in origin, failed to kill cattle by intracranial, intravenous, subcutaneous or oral administration. (Nor, apparently, did the strains used kill rabbits by intracranial inoculation.) A culture which had had its virulence restored by serial passage through 14 rabbits was pathogenic for cattle by the intracranial route, but produced only a severe temporary reaction when given intravenously. (It is interesting to note that a pregnant cow was included in the intravenous series and that she did not abort, *cf.* Graham *et al.*, *J. inf. Dis.*, **66**, 91). This virulent strain killed sheep, pigs and poultry by intracranial inoculation but not by the intravenous route: rabbits, however, succumbed to infection by either route, but no lesions were found in the central nervous system following intravenous inoculation.

The sera of most of the inoculated animals contained agglutinins but the reactions were so variable and inconsistent that they cannot be depended upon as a routine laboratory procedure.

J. S. P.

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[THE WORM BURDEN OF SHEEP ON IMPROVED AND UNIMPROVED HILL PASTURES. Rees, Gwendolen. (1942.) *J. anim. Ecol.* **11**. 198-204.]

Fortnightly egg-counts were carried out from July to December, 1941, on the fresh droppings of two groups of sheep in the same area. During the winter months the sheep, which were of varying ages, were wintered on the same lowland pasture, but in May, 12 of them were transferred to an improved, and eight to an unimproved hill pasture. The unimproved pasture consisted mainly of *Molinia caerula*, *Nardus stricta*, which is not eaten by sheep, and *Festuca ovina*, and was traversed by two streams; it was populated at the rate of 1·6 sheep per acre. The improved pasture was well drained, had been ploughed, resown and manured since 1936, and consisted mostly of perennial rye, timothy and white clover; it carried four sheep per acre and, owing to the absence of *Limnaea truncatula*, did not provide any opportunity for reinfestation with liver-fluke.

The egg-counts indicated in both cases an initial fall in the excretion of nematode eggs (of various species, none being predominant) followed by a rise which was much greater in the case of the sheep on unimproved pasture. Fluke-egg excretion also was much greater on the unimproved pasture.

It is suggested that the apparently greater resistance to helminthiasis of the sheep on the improved pasture was due to their far superior general condition and to the better quality of the herbage, which was not grazed so closely or so extensively.

A. N. W.

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[THE EFFECT OF ARTIFICIAL CRYPTORCHIDISM ON THE PROSTATE GLAND OF DOGS. Schlotthauer, C. F., and Bollman, J. L. (1942.) *Amer. J. vet. Res.* 3. 202.]

There is an intimate relationship between the testis and the prostate gland, since bilateral castration in puppies causes failure of the prostate gland to develop normally, and in adults atrophy of the gland: unilateral castration is without effect. The gland develops normally in cases of congenital unilateral abdominal cryptorchidism, but not if the condition is bilateral. To determine which part of the testis was responsible for maintaining the prostate gland in its normal condition, unilateral abdominal cryptorchidism was artificially produced; whether the other testis was removed or not, the prostate was not affected. Sections of the testis replaced in the abdomen showed that the tubules were atrophied, but the interstitial cells were not affected, and their integrity apparently was sufficient to keep the prostate gland in its normal condition. The failure of the prostate gland to grow normally in cases of congenital bilateral abdominal cryptorchidism would thus seem to be due to the fact that the interstitial cells do not themselves develop properly as, once developed, they produce sufficient prostate-maintaining hormone even if the testis is returned artificially to the abdominal cavity.

E. C.

The Ministry of Agriculture has made a new appeal to schoolchildren, through their teachers, not to harm the nests or eggs of small birds which play a useful part in the campaign against insects and other pests. The appeal says that all children can help the war effort by protecting birds whose work is valuable to farmers and gardeners. Even the war on the harmful house-sparrow should be left to adults.

REVIEW

[**TOPOGRAPHICAL ANATOMY OF THE DOG.** O. C. Bradley: 4th Edition revised by T. Grahame (1943). pp. xii + 316. 9 plates, 128 figures. Oliver and Boyd, Ltd., Edinburgh and London. 28s. net.]

In the preparation of the new edition of this book opportunity has been taken to introduce important new data.

It is essential that the student has an early opportunity to study radiographic anatomy so that he may appreciate from the beginning the different appearance of, for example, a joint seen in an X-ray print as compared with one seen in an ordinary photograph or even as it appears in the natural state. The series of X-ray plates which have been introduced in this new edition will help to supply this need; and although it is perhaps asking too much to expect to find an instructional section devoted solely to the interpretation of X-ray films, more detailed legends describing the plates would not have been out of place.

The black and white figures indicating the attachment of muscles on bones are very good. This method of teaching, often employed by Bradley, is excellent. Some of the areas of attachment indicated are too detailed to commit to memory, but they will serve as a useful guide. The action of muscles is also given.

The lymphatic system is now considered in a separate section and lymph nodes are named in accordance with current American literature. The introduction of a few line tracings showing the distribution of the peritoneum will assist in following the text of this particular section.

The original text and nomenclature have been retained. The terminology employed is not above criticism, but it is hardly possible to make radical changes of this kind in a revised edition even if it were so desired. It is to be regretted, however, that a table of contents has not been introduced. The editor is to be congratulated on the compilation of this work, which should prove of added value to the profession.

QUESTIONS IN PARLIAMENT

Kenya (Tsetse Fly)

Prior to the Easter Recess, Mr. R. Morgan asked the Secretary of State for the Colonies whether he can make any statement on the steps taken to cope with the tsetse fly in Kenya?

Colonel Stanley: The protection of native settlements in Kenya from sleeping sickness by clearance of bush and direct attack on *glossina palpalis*, has been undertaken hitherto by the Medical Department, and field work and research in the control of fly have been conducted by the Veterinary Department. In the report of the Veterinary Department for 1941 attention has been drawn to a considerable extension of outbreaks of animal trypanosomiasis. As an essential preliminary to reinforcing the activities to which I have referred by comprehensive measures for controlling this extension, for the protection of dispersal zones and the reclamation of infested areas, a survey of the existing fly belts throughout the Colony was commenced in 1942, and will be completed in 1944. In December of last year, I invited the East and West African Governments to review generally the present position with regard to tsetse fly infestation and human and animal trypanosomiasis, and to make recommendations with a view to securing the maximum co-ordinated effort and the pooling of experience among all those concerned in tsetse research and administrative measures throughout British Tropical Africa. The tsetse problem is thus now engaging full attention in its widest aspects.

A NEW "PEDIGREE HOUSE"

Under the above heading, "Blythe" writes in a recent issue of *The Farmer and Stock-Breeder*: "Breed society staffs still remaining in their country quarters are hankering to return to the more convenient metropolis. With the increase in pedigree breeders and the decrease in postal facilities, country quarters leave much to be desired, to say nothing of the personal aspect. I heard an interesting report the other day that the old idea of bringing all the breed societies in London under one roof is being revived.

"This time there are influential pedigree men behind the scheme who have initiative, energy, and, above all, the capital ready to put down for the purchase of a suitable property which is already in view. If the new headquarters could also house the R.A.S.E. and others actively connected with pedigree livestock, much time would be saved for all those who must pay frequent visits to London on pedigree business."

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

May 20th.—Meeting of the Ayrshire Division, N.V.M.A., at the Hannah Dairy Research Institute, Ayr, 2.30 p.m.

June 8th.—One-hundredth Annual General Meeting of the Royal College of Veterinary Surgeons, at the Royal Agricultural Society of England, 16, Bedford Square, 11 a.m.

June 8th.—Annual General Meeting of the Victoria Veterinary Benevolent Fund at 16, Bedford Square, immediately following the Annual General Meeting, R.C.V.S.

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PERSONAL

Appointment.—The appointment in the Colonial Veterinary Service is announced of Mr. R. A. Hutchinson, M.R.C.V.S., as Veterinary Officer, Gambia.

Birth.—Halford.—On April 24th, 1943, to Olive, wife of G. J. G. Halford, M.R.C.V.S., of 8, Riversleigh Avenue, Lytham St. Annes, a son.

We repeat below, in proper form, an item from our Personal Column of last week which unfortunately was rendered unintelligible by the printers in carrying out late transposition instructions, and tender our sincere apologies both to the family concerned and to our readers:—

Deep sympathy will be extended to Major Henry Allen, O.B.E., M.R.C.V.S., and Mrs. Allen, of Sidcup, in the death in action last month of their only son, Lieut.-Colonel Charles H. B. Allen, of the Royal Ulster Rifles (attached the Royal Inniskilling Fusiliers), formerly Adjutant and Second-in-Command, the London Irish Rifles. The family name is renowned in Irish veterinary legal history, for a great-uncle of the gallant officer whose death we mourn was none other than that Charles Allen, F.R.C.V.S., of Dublin, who, in the Courts of his country, fought for and won in 1903 that right of exemption from jury service for veterinary surgeons throughout Ireland which as yet is unattained by their colleagues on this side of the Irish Sea. Having been fined for non-attendance, Charles Allen contested being called upon to serve on the ground that he came within the description of persons exempted under Section 20 of the Juries Act, 1876, as being "a licensed medical practitioner," and the judges decided, by a majority, that he was entitled to exemption and to a remission of the fine. In this country, of course, only "registered medical practitioners" are exempt.

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R.C.V.S. OBITUARY

Mullaney, James, Major R.A.V.C. (retd.), of Sea View, Corballa. Graduated Dublin, December 14th, 1915. Died April 29th, 1943.

GENERAL OBITUARY

Carter.—On April 24th, 1943, after a brief illness at Bexleyheath, J. Campbell Carter, late of Bromley Court Hotel, Bromley, for many years with Messrs. Willows, Francis, Butler & Thompson, Ltd.

Mr. Campbell Carter

The death of Mr. J. Campbell Carter will be felt as a personal loss by many practitioners, who held him in high esteem, appreciating his sterling qualities as a business representative—well informed, helpful and genial. Mr. Carter enjoyed the friendship of veterinarians throughout the country and will be much missed, not only at the surgeries of those who looked forward to his useful visits, but at the Annual Congress of the N.V.M.A., where he was a regular and welcome participant, on behalf of his firm, in the Drugs Exhibition.

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ROYAL ARMY VETERINARY CORPS

The following announcements are made in recent issues of *The London Gazette*: John Nicholas Cloke (263907) to be Lt. (March 9th, 1943); War Subs. Lt. P. H. Hobbs (190792) from R.A. to be Lt. May 1st, 1943, retaining his present seniority; 2nd Lt. A. C. Fraser (185737) from R.A.S.C., to be Lt. June 1st, 1942, retaining his present seniority.

PENICILLIN COMMITTEE

The Minister of Supply announced in the House of Commons on April 14th that the object of the committee on penicillin was to secure that all available information regarding clinical and chemical trials and methods of production was collected and exchanged and that everything possible was done to promote the most rapid development.

Mr. Arthur Mortimer, deputy director of medical supplies, Ministry of Supply, is Chairman of the committee and the other members are: Professor A. Fleming (St. Mary's Hospital), Professor H. W. Florey (School of Pathology, University of Oxford), Professor H. Raistrick (London School of Hygiene), Sir Robert Robinson (Dyson Ferrins Laboratory, University of Oxford), Dr. C. R. Harrington and Dr. A. N. Drury (Medical Research Council), Dr. V. D. Allison (Ministry of Health), Professor I. M. Heilbron (University of Cambridge), Lt.-Col. Sir Russell Wilkinson (Military Medical Adviser, Ministry of Supply), together with representatives of firms engaged in production of penicillin.

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MILK RECORDING: BOARD PLANS FOR TESTING CENTRES

"Improved and cheaper facilities for testing milk samples from recorded herds are being planned by the Milk Marketing Board," states the Board's journal, *The Home Farmer*, and continues: "They relate to both the 'junior' and 'senior' milk recording schemes now being administered from Thames Ditton.

"The testing of milk from individual cows for fat content is a most important part of the work and producers must be confident that the tests are beyond criticism. As the schemes grow recorders will not be able to attend personally to the tests and outside authorities are by no means a solution to the problem.

"The Board are therefore examining the possibility of establishing fewer testing stations, each capable of dealing with more samples than is now possible at the average centre. This should result in a reduction of the charge per sample. Existing centres, where suitable, and operating directly under the Milk Recording Committee, are being considered in conjunction with M.M.B. creameries and centres licensed by the Ministry of Agriculture under the National Milk Testing and Advisory Scheme. The position in each area will be reviewed before a final decision is reached."

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FOOD AND AGRICULTURE AFTER THE WAR

The Washington Correspondent of *The Times*, in a message dated April 28th, observes: "The agenda to which the United Nations conference on food and agriculture at Hot Springs, Virginia, will apply itself has been issued by the State Department. Its preamble gives a general idea of the problem awaiting solution. The work begins, it states, with an effort to ascertain the needs of the peoples of the world in terms of food, clothing, and the other essential agricultural products. It is recognised that the excessive accumulations of some agricultural products in the past were not surpluses, when measured by the world's minimum needs, but merely the results of maldistribution and under-consumption. An attempt will be made to ascertain the prospects of organising agricultural production throughout the world to satisfy those needs and the measures, national and international, by which production can be increased and better directed in relation to consumption. Finally, the conference will consider means of ensuring that what is produced reaches the consumer. State Department officials emphasise that the conference will be a means of assembling information and making recommendations that will benefit all 43 nations represented. The delegates will not be plenipotentiaries."

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PLACE OF THE HEAVY HORSE

At a council meeting of the Suffolk Horse Society the proposal was made that the heavy horse societies and the N.F.U. should approach the Ministers of Transport and Town and Country Planning to advance the claims of horse owners and users in the towns. Mr. C. R. Hannis, Windsor, who put the suggestion forward, said that in replanning the country, rebuilding the towns and the construction of new roads, provision must be made for both horse and motor traffic, and the horse's claims must be pressed. It was agreed to write to the other heavy horse societies, the N.F.U., and the National Horse Association, with a view to action being taken on the lines suggested.

CONTROL OF DISEASES OF DAIRY CATTLE

STATEMENT SHOWING THE NUMBER OF UNDERTAKINGS NOTIFIED TO THE MINISTRY OF AGRICULTURE DURING THE MONTH OF APRIL, 1943

County	Undertakings Notified		Total Undertakings		
	During Month	Previously	Number	Number of Cattle	
				Cows	Heifers
ENGLAND AND WALES					
Bedford	3	34	37	819	493
Berks	3	75	78	2,849	1,940
Bucks	5	56	61	1,634	1,161
Cambridge	—	16	16	361	147
Chester	11	350	361	12,012	4,148
Cornwall	—	8	8	154	103
Cumberland	7	42	49	1,234	1,086
Derby	8	244	252	7,582	4,319
Devon	8	136	144	2,405	1,371
Dorset	3	58	61	1,932	1,005
Durham	4	222	226	5,274	1,790
Essex	5	210	215	7,866	4,466
Gloucester	1	76	77	2,444	1,296
Hampshire	10	311	321	9,521	5,825
Hereford	—	26	28	495	261
Hertford	2	62	64	2,091	1,234
Hunts	1	13	14	529	366
Isle of Ely	1	1	2	26	54
Isle of Wight	—	16	16	310	148
Kent	7	116	123	2,722	1,447
Lancs	7	181	188	5,321	1,548
Leics	3	77	80	2,102	1,424
Lincs (Holland)	—	4	4	45	11
Lincs (Kesteven)	—	19	19	233	120
Lincs (Lindsey)	1	69	70	1,404	724
Middlesex	—	11	11	507	224
Norfolk	7	161	168	5,042	3,185
Northants	—	63	63	1,745	1,185
Northumberland	—	50	50	1,608	769
Notts	6	107	113	2,620	1,423
Oxford	—	33	33	958	883
Rutland	—	9	9	157	101
Salop	7	216	223	6,941	3,373
Soke of Peterborough	—	1	1	37	31
Somerset	7	148	155	4,380	1,897
Staffs	6	174	180	5,228	2,723
Suffolk, E.	—	79	79	1,920	1,361
Suffolk, W.	—	41	41	916	556
Surrey	1	104	105	2,974	1,347
Sussex, E.	9	161	170	4,430	2,490
Sussex, W.	2	104	106	2,969	1,731
Warwick	5	107	112	2,861	1,749
Westmorland	—	18	18	499	568
Wilts	2	65	67	3,031	1,419
Worcester	1	129	130	2,836	1,401
Yorks, E.R.	4	71	75	1,233	646
Yorks, N.R.	5	97	102	2,089	1,231
Yorks, W.R.	5	234	239	6,028	2,922
Anglesey	—	35	35	613	383
Brecon	—	3	3	50	22
Caernarvon	1	103	104	1,757	881
Cardigan	—	21	21	300	238
Carmarthen	2	180	182	3,381	1,702
Denbigh	1	51	52	1,056	540
Flint	3	95	98	2,158	941
Glamorgan	2	74	76	1,221	442
Merioneth	—	10	10	123	82
Monmouth	—	37	37	857	529
Montgomery	—	13	13	239	169
Pembroke	2	85	87	1,594	989
Radnor	—	—	—	—	—
TOTALS	170	5,312	5,482	145,723	75,920
SCOTLAND					
Aberdeen	—	24	24	1,094	333
Angus	—	17	17	659	232
Argyll	1	4	5	90	83
Ayr	2	46	48	1,762	1,458
Banff	—	2	2	103	20
Berwick	—	1	1	33	22
Bute	—	—	—	—	—
Caithness	—	—	—	—	—
Clackmannan	1	4	5	183	150
Dumfries	—	17	17	911	727
Dumbarton	—	3	3	105	86
East Lothian	—	7	7	191	100
Fife	3	22	25	944	524
Inverness	—	9	9	291	186
Kincardine	—	4	4	215	111
Kinross	—	3	3	68	29
Kirkcudbright	—	15	15	918	716
Lanark	2	18	20	713	532
Midlothian	—	1	1	44	69
Moray	—	—	—	—	—
Nairn	—	1	1	14	—
Orkney	—	—	—	—	—
Peebles	1	4	5	93	55
Perth	4	24	28	664	400
Renfrew	—	9	9	384	297
Ross-shire	—	4	4	128	72
Roxburgh	—	—	—	—	—
Selkirk	—	—	—	—	—
Stirling	—	27	27	819	591
Sutherland	—	3	3	77	61
West Lothian	—	2	2	99	70
Wigtown	—	29	29	2,056	1,141
Zetland	—	—	—	—	—
TOTALS	14	309	314	12,658	8,065

Note.—Of the total 5,482 undertakings notified to date 1,460 are for 1 year, 359 are for 2 years and 3,663 are for 3 years.

Duration of Undertakings: 1 year, 80; 2 years, 29; 3 years, 205.

SCOTTISH AGRICULTURAL IMPROVEMENT COUNCIL

In June, 1941, the Secretary of State for Scotland appointed the Agricultural Improvement Council for Scotland with the following remit:—

"To devise methods for seeing that promising results of research are applied as rapidly as possible to the problems of agriculture and are incorporated in ordinary farming practice, and to advise from time to time concerning agricultural problems which appear to require scientific investigation."

In their first report, which has recently been made to the Secretary of State, the Council state that they have had seven meetings and have met the Directors of all the Research Institutes in Scotland, with whom they discussed the results of work at the Institutes and the possibility of maintaining closer contact with the Agricultural Colleges and with practical farmers. In the view of the Directors some farmers, especially in the more backward districts, are slow in making practical use of the results of research—even of those which have been well known for many years. Lectures, bulletins, Press articles, etc., on the results of research and on good farming practice did not seem to have achieved their purpose completely and it was suggested by the Council that the use of demonstration farms in suitable districts might be more effective. Acting on this suggestion the Department of Agriculture for Scotland have asked the Agricultural Colleges, in consultation with Agricultural Executive Committees, to select suitable farms, and to make arrangements with the farmers to permit their farms to be utilised for demonstration purposes and to be visited by other farmers who were interested and desirous of seeing the methods of improvement employed on them. Up-to-date arrangements have been made for six demonstration farms and negotiations are in progress for a further three.

County Extension Work.—The Council devoted a considerable amount of attention to the subject of the County Extension Work of the Agricultural Colleges. This service is the chief medium for the dissemination of knowledge on scientific agricultural methods among the great bulk of farmers and much of the credit for the marked improvement in farming methods in Scotland in recent times is due to the pioneer work undertaken, often in the face of considerable difficulties and discouragement, by the County Staffs of the Colleges. It was suggested to the Council that the service was now too small and required enlargement to meet post-war needs. It was agreed that the Colleges might try to estimate the volume of work likely to fall on them after the war and the staff required for an effective service, keeping in view the desirability of attracting the best type of students to the service by offering the prospects of a career comparable to that obtainable in other scientific professions.

Re-seeding and Ley Farming.—On the invitation of the Agricultural Improvement Council for England and Wales the Council co-operated in setting up a Committee under the chairmanship of Sir George Stapledon to investigate the problems of re-seeding and ley farming. This Committee submitted a report to the Councils containing a number of important recommendations, certain of which were brought to the notice of bodies interested in the subject, *e.g.*, the Hill Sheep Committee, the Lime Technical Committee and the Seed Supplies Committee.

The Council also considered the question of grassland improvement in Scotland and decided to appoint a sub-Committee of its members to survey the position and ascertain to what extent and in what directions the work being undertaken required to be developed.

Artificial Insemination.—The Council have appointed a Committee to consider and report on the steps which may be taken to promote and control artificial insemination in Scotland. The Committee, which includes representatives of the Highland and Agricultural Society, the National Farmers' Union and Chamber of Agriculture, the Scottish Board of Research in Veterinary Science, the Royal (Dick) Veterinary College, the West of Scotland Agricultural College and the Institute of Animal Genetics, commenced its enquiries on November 11th.

Veterinary Investigation Officers.—Three Veterinary Investigation Officers are to be appointed for Scotland, and the Council agreed with the view of the Department that these officers should be appointed, one to the staff of each Agricultural College, but that their scientific work should be directed by the Scottish Board of Research in Veterinary Science.

Cattle-fattening experiments.—The Council were interested in the problem of cattle fattening well on some farms, but failing to do so on other farms where conditions appeared to be identical. They considered that scientific investigation of the problem was desirable and, on the matter being discussed with the Agricultural Research Council, it was decided that it should be investigated at two centres, one in England and one in Scotland. Aberdeen was selected as the Scottish centre and a programme of work was prepared to be undertaken by a team of workers from the staffs of the Rowett and Macaulay Research Institutes and of the North of Scotland Agricultural College. This was approved by the Agricultural Research Council, who made a grant of £1,000 in aid of the cost of the investigation, and work is now in progress.

Distribution of Leaflets, etc.—Though there is a considerable number of useful and interesting leaflets and publications on agricultural subjects available for the information of farmers, it was felt that too few farmers know about them, or secure copies, especially if this involves writing a letter or postcard to the Department or the Stationery Office. It was suggested that copies of these leaflets, etc., should be made more readily available to farmers by having supplies of them on show and for sale at markets and auction marts. The Department have made arrangements for the employment, as a beginning, of three sales clerks, to undertake the work at markets and sales in the Edinburgh, Glasgow and Aberdeen areas respectively.

Suggestions from Farmers.—As it appeared to the Council that many farmers might be unaware of the existence and functions of the Council, it was decided to communicate with the National Farmers' Union and to ask them to submit suggestions from their members regarding farming problems which they considered required scientific investigation. The Union agreed to comply with the Council's request and have circularised their Branches on the subject.

College Economics Staff.—Consideration is being given to the question of making more effective use of the services of the Advisory Economists at the Agricultural Colleges.

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MINISTRY OF AGRICULTURE NEWS SERVICE

(D.P.K.C. Bulletin)

Curing Broodiness.—Domestic poultry keepers are out to produce the maximum number of eggs and, because the sitter cannot be broody and lay at the same time, it is desirable to break the habit as soon as it shows itself.

First prepare a coop. An old packing case not less than 20 in. in length, breadth and height will answer the purpose. Replace the solid floor with one made of wooden slats spaced at about 1 in. A small piece of 1 in. mesh wire netting will do just as well. The front should be slatted also, with at least one bar removable, so that you can put the bird in or take it out. A simple box will serve as a food trough in front of the cage, and a jam jar will hold drinking water. The essential feature is the open floor, which makes sitting most uncomfortable.

Look out for the hen that tries to stay on the nest all night. If a bird suddenly abandons sleeping on the perch, take her straight to the broody coop; don't wait until the habit is firmly fixed or she will be out of production for a long while. Three days in the coop and the habit should be broken. Return the bird to the pen and she should be back in lay within seven to ten days. During her stay in the coop feed her normally or she will lose condition. The treatment is simplicity itself, but the important point is to catch the sitter before the desire to sit becomes too firmly fixed.

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Don't Feed Parasites.—Poultry, fortunately, are not the victims of really vicious parasites that live on the outside of the body. But even if the individual damage inflicted by these pests is small, this is no reason for neglect. If the house and run are reasonably clean, there are only two pests that call for routine preventive measures—red mite and body lice.

Red mite is really misnamed, for unless gorged with blood it is not red, but appears as a fine grey powder in cracks and crevices, such as the joints in the wood of the walls, or, more commonly, at the perch sockets. It sleeps during the day, coming out at night to crawl along the perch and pierce the skin of the bird, feasting on its blood. Because it does not live on the hen throughout the 24 hours it is easily attacked by putting a barrier at the end of the perch. Dipping the last two inches of each end of the perch into a tin of creosote about once a fortnight is an effective preventive. Perches should, therefore, be detachable.

Body lice do live on the birds, but they cannot live on the human. The simplest treatment is to paint a thin line of nicotine sulphate (sold by most chemists and stores as perch paint) along the perch just before the birds go to roost. The body heat vaporises the nicotine and the effect is the same as fumigation. Any good insect powder shaken well into the base of the feathers will do the trick. But whatever cure is employed, remember to apply it twice at intervals of about 14 days to catch the lice that have hatched from eggs in between treatments.

If you can give your birds a dust bath, it is a good plan to mix a small amount of insect powder into the dry soil or fine ash. The birds will themselves do the dusting and so keep the pests at bay.

* * *

Spring Cleaning: Dirty Houses Lead to Disease.—Dirty houses are a menace to the health of flocks. There is a good reason for

the spring cleaning habit, so why not apply it to your poultry house? Disinfectants can be valuable allies in the fight against troubles, but to sprinkle a little over a dirty nest box or other fitting does no good at all.

Cleaning should be carried out in three operations. First remove all traces of previous occupation. Plenty of hot water, a hard scrubbing brush and ample "elbow grease" are the requisites. Next sluice the part that has been cleaned to remove loose particles. Then, and only then, use the disinfectant solution you fancy. Under such conditions the chemical has a real chance to attack the parasite that may cause disease.

When treating woodwork it is as well to remember that creosote has a value as a disinfectant as well as wood preservative. So why not kill two birds with one stone: clean your house and then paint on a coat of creosote. It is certainly worth while as far as the outside of the house is concerned.

* * * * *

Nest Boxes for Does.—Most does can and will make good nests in a corner of a hutch, but the practice of providing a nest box is spreading rapidly among rabbit breeders. For the average doe a square box of about 18-20 in. inside measurement is ample. And it needs no floor or top, just the walls that help by keeping the nesting material in place, so minimising the effect of sudden cold spells. You will be able to watch the doe making adjustments to suit the outside temperature. In cold weather the youngsters will appear to be almost smothered, for there is only a small "chimney" left for ventilation, the nest being almost completely covered.

A nest box is a great help in war-time, for on restricted diets large does will often produce too many youngsters to rear to a healthy weaning age. The retaining walls make it easier to take a peep into the nest without too much disturbance, and so any in excess of six can be taken away and killed.

The trick is not to introduce any strange smell into the nest, and to give the doe a tit-bit at the other end of the hutch when you are counting heads. Get rid of other smells by rubbing your hand well into the litter first.

* * * * *

A Difficult Period.—There is not a great variety of foods available for rabbits just at present, but monotony must be avoided at all costs. Breeding does particularly need ample food to keep up their body condition and to provide milk for the growing youngsters. If the same food is put in front of them day after day, the results are bound to be inferior.

At this time of year dried lawn clippings are most valuable, for they provide the minerals and vitamins lacking in root crops. But tree prunings are not to be despised. Fruit trees provide a lot of material for the rabbit to gnaw at, while even rose prunings—if you have any rose bushes left—are good. But avoid cuttings from evergreen shrubs; as a rule they are harmful.

The bulk of the diet can be provided by hay and roots, with household scraps as a valuable addition. But wild plants will soon be growing, and even a few odd leaves for each animal from plants such as hogweed will be sufficient to break the unending round that seems inevitable in this in-between period.

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THEFTS OF NEW FOREST PONIES

Thefts of ponies from the New Forest are causing so much concern, says the *National Horse Association News Sheet*, that the New Forest Pony and Cattle Society is supplementing the £25 reward, offered by the New Forest Verderers for information leading to the capture of the thieves, by an additional £75. Last summer quite a number of stallions, brood mares and young stock disappeared, and observations were kept on many of the feeding grounds, but without success. Wire traps have been found, and Sir Berkeley Pigott brought to the Court of the New Forest Verderers a length of strong wire with a loop in the end, with which a pony had been snared at Wootton. There were hairs on the wire and signs on the ground nearby that the animal had been killed and the carcase removed. Young ponies are now fetching about £25 each, and it is believed that ponies with a market value of over £1,000 have already disappeared. It is the young foals and the yearlings—probably unmarked—that are principally stolen.

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IMPORTANCE OF THE PREMIUM BULL

"Devon has two magnificent breeds of cattle with a world-wide reputation, yet in the county there are a number of nondescript herds which could be improved." This statement (says *The Farmers' Weekly*) was made by Mr. G. C. Hayter-Hames, Chairman of Devon W.A.E.C., when addressing the committee of the county branch of the N.F.U. in Exeter recently. The committee, he added, had been given almost unlimited powers to improve the livestock in the county.

The licensing of bulls scheme which had eliminated the scrub bull had raised the standard of their stock, but he considered a more important scheme was the formation of premium bull societies, and an increase in the number of these would do a great deal to improve the cattle.

He suggested that every bull society should insist on its members joining the veterinary panel.

* * * * *

We hope the Agricultural Improvement Council will be no mere war-time measure. The need for improvement will continue for as long as any of us can foresee, and indeed, must be a prime foundation of our post-war work. We must not imagine that good farming is only a war-time necessity.—*Farmers' Weekly.*

* * * * *

The Hide Improvement Society point out that meat as well as leather suffers from the warble fly. Stock raisers owe a duty to the country as well as to themselves to dress infested cattle. It should be started now, when the grubs are hatching.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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VETERINARY SURGEONS ACTS (AMENDMENT) BILL

Sir,—A brief comment on Mr. Townson's letter. The Bill is not "to allow quacks legitimately to practise veterinary medicine and surgery." They can do this without the Bill. If the Bill became law it would prevent more unqualified practitioners being created.

In *The Veterinary Record* for June 27th, 1942, Mr. Cooke is reported to have informed the Students' Conference that the Bill proposed to confer on quacks the title of Veterinary Practitioner. But the Bill definitely prohibits the use of the word veterinary in any connection whatever by unqualified persons. Clearly, therefore, he was misinformed and Mr. Townson is unfortunately one of those whom this statement has misled.

Yours faithfully,
FRED BULLOCK.

Royal College of Veterinary Surgeons,
18, Victoria Avenue,
Harrogate,
Yorks.
May 1st, 1943.

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"FELINE INFILTRATION"

Sir,—The following letter, appearing in the issue of *Parade* for December 5th, 1942, an illustrated journal published in Cairo for our three Services in the Middle East, will, I am sure, be of interest, for the occurrence must be unique.

"ORDNANCE QUINS"

To the Editor of "Parade."

"Sir,—Somewhere in the United States workmen packed a Diesel engine into a crate. By road and rail the crate travelled across America to an east coast port, where it was lowered into the hold of a ship. Eleven weeks later, somewhere in Egypt, British soldiers opened the crate. As the sides fell away, out stalked a cat followed by five healthy kittens.

The cat had curled up somewhere in the case when the engine was being packed and had been 'battened down' inside. For eleven weeks she had lived on engine oil and greaseproof paper and on this diet had given birth to and nursed her five kittens.

Still doing well, mother and quins have been adopted by an Ordnance unit.

J. D."

My son himself saw the cat and her kittens and *Parade* reproduces a photograph of them. All appear in quite good condition.

May I point out that the Japanese, past masters as they are in the art of "infiltration," do not—as yet—seem to have tried this method!

Yours faithfully,
D. S. RABAGLIATI,

"Fidra,"
St. Margaret's Road,
Edinburgh, 9.